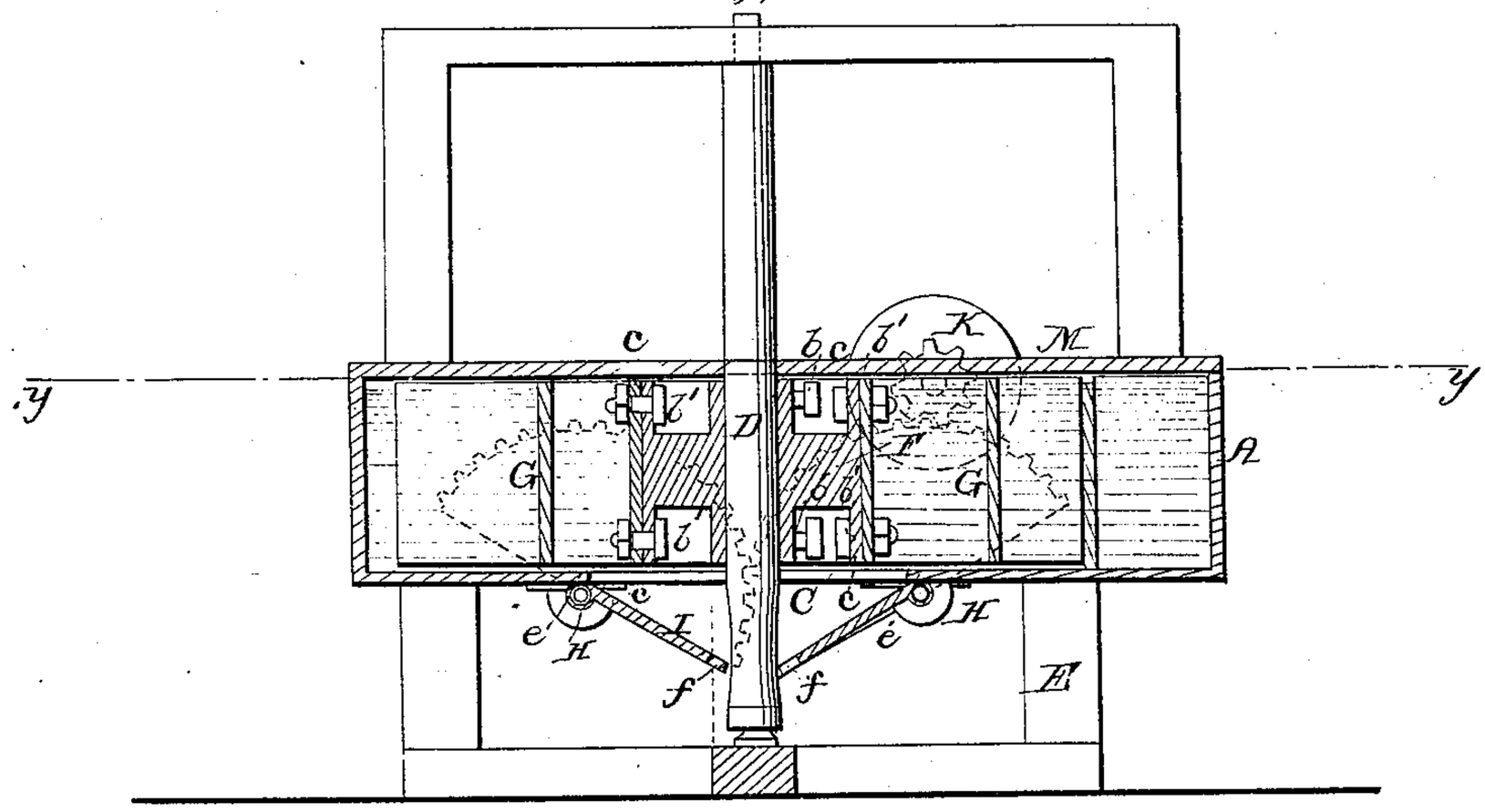
H. G. Nelson,

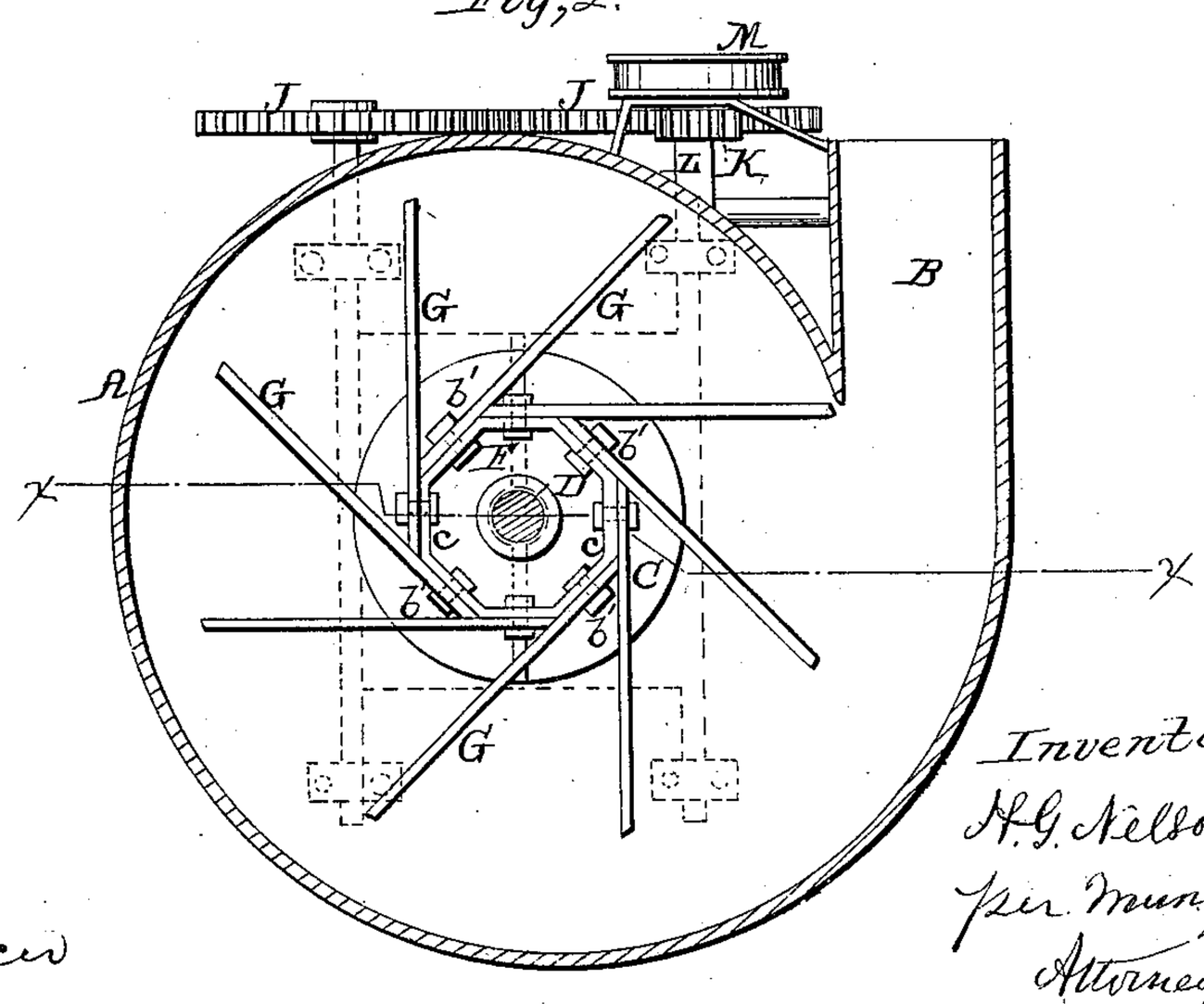
Water Wheel,

No. 29,810, Patented Aug. 28, 1860.

Fig; 1.



Fig; 2.



Witnesses;
D. W. Coombs
R. S. Spencer

Inventor;
H. G. Nelson
per Munn & Co
Attorneys

UNITED STATES PATENT OFFICE.

HENRY G. NELSON, OF LOCKPORT, NEW YORK.

WATER-WHEEL.

Specification forming part of Letters Patent No. 29,810, dated August 28, 1860; Reissued May 21, 1861, No. 1,187.

To all whom it may concern:

Be it known that I, HENRY G. NELSON, of Lockport, in the county of Niagara and State of New York, have invented a new and Improved Horizontal Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical section of my invention, taken in the line *x*, *x*, Fig. 2. Fig. 2 is a horizontal section of the same, taken in the line *y*, *y*, Fig. 2.

Similar letters of reference indicate corresponding parts in the two figures.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, represents the scroll of the wheel; B, the water-induction passage; and C, a central or discharge opening; D, is the shaft of the wheel, having its lower end stepped at *a* in a framing E, which supports the scroll A.

On the shaft D a polygonal hub F is placed and secured thereto by screw-bolts *b*. This hub F may be of cast iron, and it has a flange *c* at its upper and lower ends—said flanges being in the same planes as the faces of the hub, and are in fact a portion of the faces, as will be seen by referring to Fig. 1. The flanges *c*, serve to increase the bearing surface to which the buckets are to be attached and render the point of attachment firm without increasing the weight of the wheel only very slightly.

To each face or side of the hub F there is secured a bucket G, by bolts *b*, said bolts passing through the flanges *c*. The buckets G are simply wrought-iron plates of a suitable length and height—cast-iron might be used but wrought iron would be preferable. The shaft D is of wrought iron, and the scroll A of cast-iron.

To the under side of the scroll A there are attached two parallel shafts H, H, at opposite sides of the vent C. These shafts are allowed to turn freely in their bearings *e*, and to each shaft a gate I is attached, each gate having a semi-circular notch *f* made in it, that it may, when closed fit snugly around the shaft D. The two parts I I when closed cover the vent or opening, C, and prevent the escape of water from the scroll A. The outer ends of the shafts H, H are provided with geared sectors J, J, which mesh into each other; and into one of the sectors J, a pinion K gears, said pinion being on a shaft L, which has a wheel M at its outer edge.

The gates I, I, in consequence of being connected by the geared sectors J, J, are raised and lowered simultaneously, and the discharge of the water from the scroll A, and consequently the speed of the wheel may be regulated as desired, and with greater facility than usual.

By having the wheel formed by bolting buckets to the sides or faces of a polygonal hub, a very simple, cheap and durable wheel is obtained, as all the work required is simply to bolt the buckets to the hub. In case of a bucket being injured it may be readily detached and replaced by a new one.

I do not claim broadly the employment or use of gates placed at the discharge orifice or vent of the scroll or penstock of a water-wheel. For gates thus placed have been previously used, although arranged differently from the plan herein shown and described, and not so convenient to operate; but,

Having thus described my invention, what I do claim as new and desire to secure by Letters Patent, is:—

The arrangement of the gates I, I, shafts H, H, and sectors J, J, with the shaft D, vent C, and case A, all as herein shown and described for the purpose set forth.

HENRY G. NELSON.

Witnesses:

JOHN L. BUCK,

A. B. PRENTICE.